

Interpreting Breastfeeding Data to Improve Maternity Practice in Infant Nutrition and Care

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Learning Objectives



- Describe infant feeding patterns in California
- List maternity practices that improve breastfeeding outcomes among California mothers
- Discuss the status of maternity practices related to infant feeding and care in California
- Explain criteria for choosing priority areas to focus quality improvement efforts



Background: Shifting the Focus from the Individual



- Multiple national efforts are underway focusing on identifying social, economic, environmental and other “determinants of health” that influence individual health behaviors and health status
- Selected examples
 - Federal Maternal and Child Health Bureau
 - Healthy People 2020
 - Office of the Surgeon General



National and State Maternal and Child Health Conceptual Frameworks



- The federal Maternal and Child Health Bureau is developing a new strategic plan that incorporates the Life Course Perspective, which proposes that
 - an inter-related web of social, economic, environmental and physiological factors contribute to good health.
 - critical developmental periods (pregnancy, childhood, adolescence) differentially impact health trajectories.
- California MCAH program has incorporated these concepts into its Statewide needs assessment and implementation plan.



Healthy People 2020
healthypeople.gov



Healthy People provides science-based, 10-year national objectives for improving the health of all Americans.

What's New for HP 2020?

A renewed focus on identifying, measuring, and reducing [health disparities](#) through a [determinants of health](#) approach.




Healthy People 2020
New Breastfeeding Objectives




HP 2020 includes breastfeeding objectives in three new areas:


- Reduced hospital supplementation rates
- Increased worksite support;
- Improved hospital practices
 - Increase the proportion of live births that occur in facilities that provide recommended care for lactating mothers and their babies (facilities designated Baby Friendly – BFHI)



The Surgeon General's Call to Action to Support Breastfeeding




The Surgeon General's Call to Action to Support Breastfeeding




U.S. Department of Health and Human Services, The Surgeon General's Call to Action to Support Breastfeeding, Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General, 2011.

- Focus is on removing barriers to breastfeeding across multiple domains:
- "...set forth the important roles and responsibilities of clinicians, employers, communities, researchers, and government leaders and to urge us all to take on a commitment to enable mothers to meet their personal goals for breastfeeding."



Relevance to Breastfeeding




- Hospital maternity policies greatly influence infant feeding behaviors.**
- Infant hospital breastfeeding behaviors have a subsequent impact on breastfeeding duration throughout the first year of life.**


¹ Murray EK, Ricketts S, Dellaport J. Hospital practices that increase breastfeeding duration: results from a population-based study. *Birth*. 2007;34(3):202-211.

² Rosenberg KD, Stull JD, Adler MR, Kasehagen LJ, Crivelli-Kovach A. Impact of hospital policies on breastfeeding outcomes. *Breastfeed Med*. 2008;3(2):110-116.

³ DiGirolamo AM, Grummer-Strawn LM, Fein SB. Effect of maternity-care practices on breastfeeding. *Pediatrics*. 2008;122(suppl 2):S43-S49.




Healthy People Breastfeeding Initiation and Duration Goals




Objective	% of CA Mothers 2007	Target	
		2010	2020
Increase the proportion of infants who are breastfed:			
In the early postpartum period	86.6%	75.0%	81.9%
At 6 months	53.8%	50.0%	60.5%
At 1 year	31.4%	25.0%	34.1%
Exclusively through 3 months	40.4%	40.0%	44.3%
Exclusively through 6 months	17.2%	17.0%	23.7%

Source: Centers for Disease Control and Prevention National Immunization Survey, Provisional Data, 2007 births.
http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm



U.S. National Immunization Survey (NIS)




Data Source for HP 2020 Breastfeeding Objectives


- Nationwide telephone survey that provides current national, state, and selected urban-area estimates of vaccination coverage rates for U.S. children ages 19 to 35 months.
- Since July 2001, breastfeeding questions have been asked on the NIS to assess the population's breastfeeding practices.

Hospital Experiences and Breastfeeding Among Women Delivering "Healthy" Newborns in California


Maternal and Infant Health Assessment (MIHA) Survey

For more information about the MIHA Survey, please visit <http://cdph.ca.gov/MIHA>







MIHA Survey: Background and Objectives



- Annual survey of California women with a recent live birth implemented in 1999 and funded by the Maternal, Child and Adolescent Health Division and the California Women, Infants and Children (WIC) Division.
- MIHA is implemented in collaboration with the University of California, San Francisco
- Self-administered mail-survey to women sampled from birth certificates (February – May), with telephone follow-up to non-respondents.
- Administered to English and Spanish speaking populations.
- From 1999-2009 response rates have been 70% or greater, with approximately 3,000-3,500 surveys completed annually.




Examples of Subject Areas Covered in MIHA




Questions may ask about the time period before, during or after pregnancy

- Breastfeeding (duration, hospital experience, etc.)
- Maternal Weight / Weight Gain
- Food Security
- Folic Acid Use
- Alcohol/Tobacco Use
- Oral Health
- Mental Health
- Domestic Violence
- Pregnancy Intention / Contraception Use
- Access to Care / Medi-Cal / WIC
- Social / Economic Indicators



MIHA Survey 2009 Questions Breastfeeding



- Since your new baby was born, have you ever breast fed him/her at all (even once)?

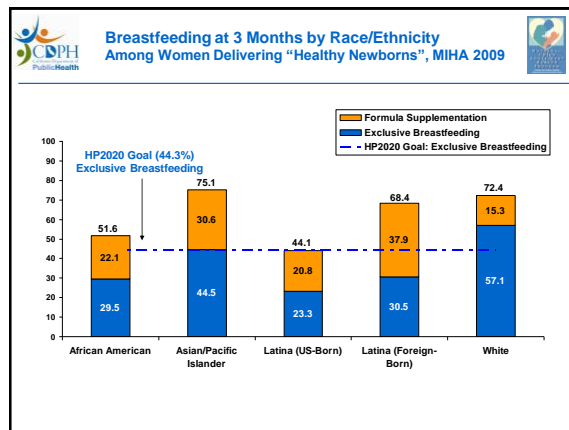
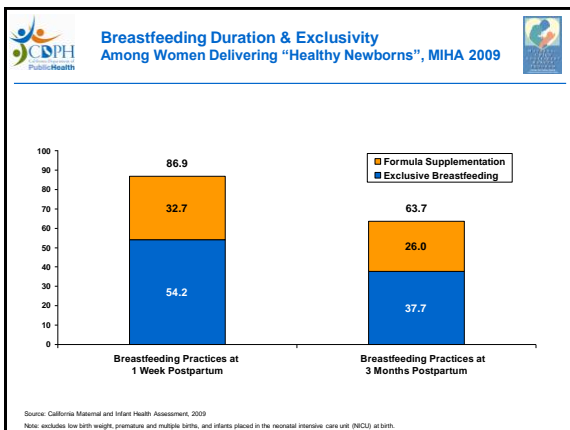
Yes No
- Are you still feeding your baby breast milk?


Yes No
- When your baby was one week old, what were you feeding him/her? **Check all that apply.**

Breast milk
Formula
- When your baby was three months old, what were you feeding him/her? **Check all that apply.**


Breast milk
Formula
Food (like cereal, baby food, or mashed up food the family eats)

____ days **OR** ____ weeks **OR** ____ months





MIHA Survey 2009 Questions Hospital Experiences After Delivery




- In the first two hours after your baby was born, how long did you hold your baby "skin-to-skin" (your baby's bare chest on your bare chest)?

Not at all
Less than 15 minutes
15 to 30 minutes
30 minutes to 1 hour
1 to 2 hours
- At the hospital, about how many hours each day did your baby stay in the same room with you? (By a day, we mean 24 hours).


Never or almost never
1 to 12 hours every day
13 to 23 hours every day
More than 23 hours every day
- About how soon after your baby was born did you try to breast feed him/her for the very first time?

Less than 1 hour after my baby was born
1 to 2 hours after my baby was born
2 to 6 hours after my baby was born
More than 6 hours after my baby was born
- At the hospital, was your baby fed anything other than breast milk?

Yes
No
I don't know



Hospital Practices and Breastfeeding Definitions and Exclusions Among Women Delivering "Healthy Newborns", MIHA 2009

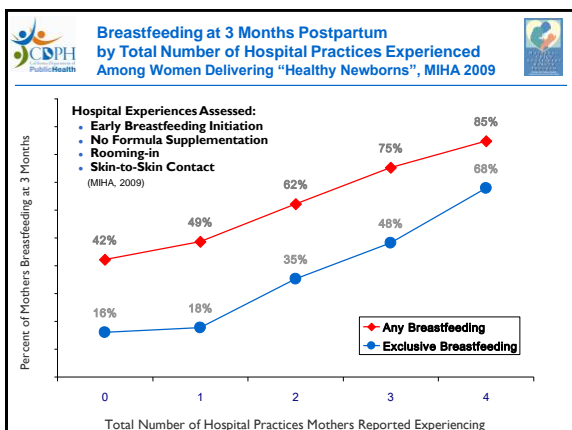
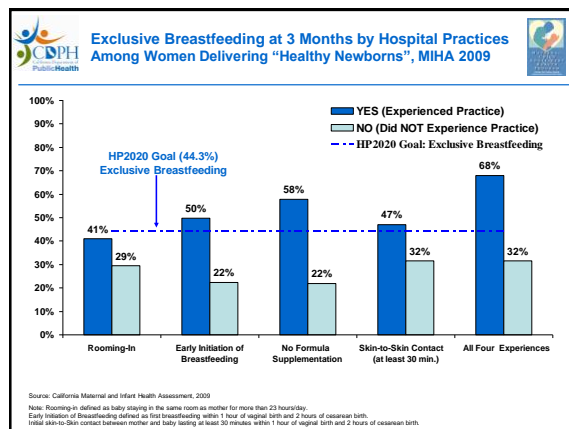
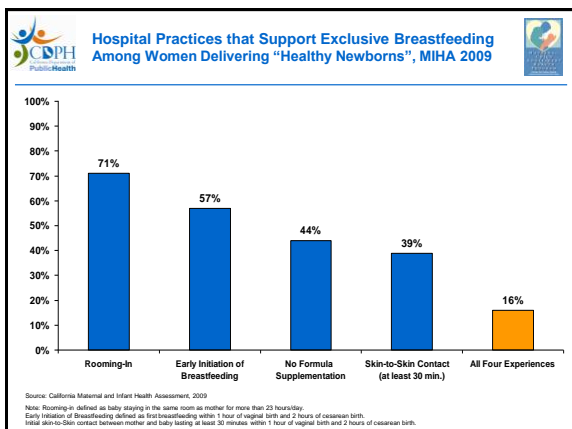


Definitions:

- Rooming-in (baby stayed in same room as mom 23 hours/day or more)
- Early Breastfeeding Initiation (within 1 hour of vaginal birth or 2 hours of c-section birth)
- Skin-to-Skin Contact (at least 30 minutes within 2 hours of giving birth)
- No Formula Supplementation (breast milk only while in the hospital)

Excludes infants considered to be "at risk":

- Low birth weight (5 pounds, 8 ounces or less)
- Premature (less than 37 weeks gestation)
- Placed in the neonatal intensive care unit (NICU) at birth
- A multiple birth (twins or other multiples)



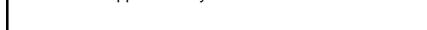
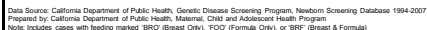
California In-Hospital Breastfeeding Newborn Screening Program Data

For more information about in-hospital breastfeeding data, please visit <http://cdph.ca.gov/breastfeedingdata>

California Department of Public Health CDPH

- ### In-Hospital Breastfeeding Data Source: Newborn Screening Program Data
- Administered by the Genetic Disease Screening Program
 - All nonmilitary hospitals providing maternity services are required to complete the Newborn Screening (NBS) Test form
 - Infant feeding data include all feedings since birth to time of specimen collection (usually 24-48 hours since birth)

- ### Methodology for Analyzing In-Hospital Breastfeeding Data
- Numerator for 'Exclusive Breastfeeding'
 - records marked 'Breast' Only
 - Numerator for 'Any Breastfeeding'
 - records marked 'Breast Only' or 'Breast and Formula'
 - Denominator for both Any and Exclusive Breastfeeding
 - excludes records marked 'TPN/Hyperal' or 'Other' and those with unknown method of feeding ('Not Reported')
- New:** as of 2008
- excludes cases where infant was in a Neonatal Intensive Care Unit (NICU) at time of specimen collection



☐ ANALYSIS

☐ OTHER SPECIES

☒ COLLECTED AT HOME OF HOLOTYPE

☐ TYPE TRANSFERRED

☐ OTHER SPECIES

☐ BY REG. FOR BIRD

☐ NUMBERED

☐ FORMULA

☐ FURTHER

☐ SUTILE

HANDWRITING

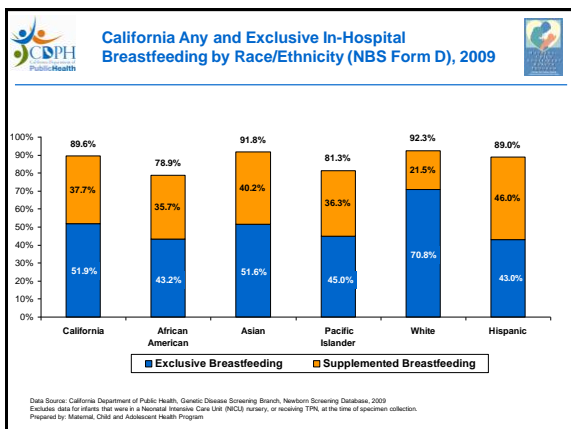
REVIEW: include specimen collection

RBC TRANSFUSION BEFORE COLLECTION:
☐ NO ☐ YES (NOTE: donations from cats considered)

 Alert

Please note: the 2009 data presented below should not be compared to data published in

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
African American	4,808	3,866	724	(71.2 - 73.7)	2,042	41.8	(40.4 - 43.2)	18,281	12,268
American Indian	320	262	81.9	(77.3 - 86.7)	179	65.9	(62.6 - 69.3)	626	488
Asian	10,178	9,163	90.0	(89.4 - 90.6)	6,022	63.3	(62.3 - 64.2)	34,339	33,364
Multiple Race	4,873	3,801	84.1	(84.3 - 90.1)	2,831	84.8	(85.1 - 88.1)	11,763	10,856



**The Center for Disease Control and Prevention (CDC)
Maternity Practices in Infant Nutrition and Care (mPINC) Survey**

For more information about the mPINC Survey, please visit <http://cdc.gov/mpinc>

California Department of Public Health

Background: mPINC Survey

In 2007, CDC administered the first national survey of maternity care practices related to breastfeeding, known as the Maternity Practices in Infant Nutrition and Care (mPINC) Survey to all facilities in the US.

- This survey established a baseline measure of these practices and documented the extent to which practices vary by state.
- CDC provides this information to birth facilities in the US to help find opportunities to improve their practices and policies and to improve maternal and child health in their communities.

mPINC Survey Concepts

Practices and policies related to the WHO/UNICEF *Ten Steps to Successful Breastfeeding*

Labor and birthing practices such as:

- Induction & augmentation
- Mode of delivery

Postpartum care practices such as:

- Infant location for routine procedures

mPINC Survey Methodology

- Biennial national census of facilities routinely providing maternity services (2007, 2009...2011)
 - Private hospitals
 - Public hospitals
 - Free-standing birth centers
- Single key informant
- Assesses 'usual practice' among healthy, term newborns

mPINC Survey Methodology



52 total questions (categorized into 7 dimensions)



Points were assigned to responses to every question.

- Higher points were given for practices that are supportive of breastfeeding.

Subscores (0-100 scale) = average of points for each question in the dimension.

Composite quality practice scores (0-100 scale) = average of care dimension subscores.

 mPINC Survey Dimensions of Care 	
Dimension of Care (mPINC subscale)	Key informant reports on: (examples)
Labor and Delivery Care	Early skin-to-skin contact Breastfeeding initiation
Feeding of Breastfed Infants	Supplementation
Breastfeeding Assistance	Whether staff assess breastfeeding Whether staff advise on breastfeeding
Mother-Infant Contact	Mother infant separation Rooming-in
Facility Discharge Care	Post-discharge breastfeeding support Distribution of "gift packs"
Staff Training	Staff education Staff competency assessment
Structural and Organizational	Breastfeeding policies



Morbidity and Mortality Weekly Report
www.cdc.gov/mmwr

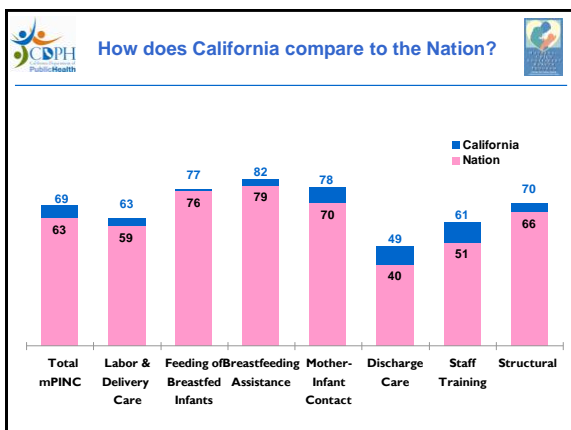
Weekly
June 13, 2008 / Vol. 57 / No. 23

Breastfeeding-Related Maternity Practices at Hospitals and Birth Centers — United States, 2007

Breastfeeding provides optimal nutrition for infants and is associated with decreased risk for infant and maternal morbidity and mortality (1); however, only four states (Alaska, Montana, Oregon, and Washington) have met all five (2) *Healthy People 2010* targets for breastfeeding (3).^{*} Maternity practices in hospitals and birth centers throughout the intrapartum period, such as ensuring mother-newborn skin-to-skin contact, keeping mother and newborn together, and not giving supplemental feedings to breastfed newborns unless medically indicated, can influence breastfeeding behaviors during

birth centers in all states, the District of Columbia, and three U.S. territories. The survey was mailed to 3,143 hospitals and 138 birth centers with registered maternity beds, with the request that the survey be completed by the person most knowledgeable of the facility's infant feeding and maternity practices.

Questions regarding maternity practices were grouped into seven categories that served as subscales in the analyses: 1) labor and delivery; 2) breastfeeding assistance; 3) mother-newborn contact; 4) newborn feeding practices; 5) breastfeeding



1. Who did this?

4&5. How does my state measure up?

6. What else did CDC find?

2&3. Why should we do something?

7. What can we do?

The CDC mPINC Survey

The CDC mPINC survey was mailed to all U.S. hospitals and birth centers in October 2007. The survey was completed by 3,143 hospitals and 138 birth centers. The survey results are available at www.cdc.gov/mmwr.


Results of the 2007 CDC mPINC Survey: California



Category	California Score	Nation Score
Total mPINC	69	63
Labor and Delivery Care	63	59
Feeding of Breastfed Infants	77	76
Breastfeeding Assistance	82	79
Mother-Infant Contact	78	70
Discharge Care	49	40
Staff Training	61	51
Structural	70	66


Improvement is Needed in Maternity Care Practices and Policies in California

California to protect, promote, and support breastfeeding mothers and infants, to meet and exceed the critical need consider the following:

- 1. Ensure California hospitals for maternity facilities and evaluate their maternity care services.
- 2. Ensure a California-wide network of breastfeeding support centers.
- 3. Establish links among maternity, nursing and community breastfeeding support networks in California.
- 4. Identify and implement programs to improve maternity care services.
- 5. Implement maternity care services that are evidence-based and support breastfeeding.
- 6. Implement maternity care services that are evidence-based and support breastfeeding.
- 7. Implement maternity care services that are evidence-based and support breastfeeding.


mPINC Dimension of Care: Labor & Delivery

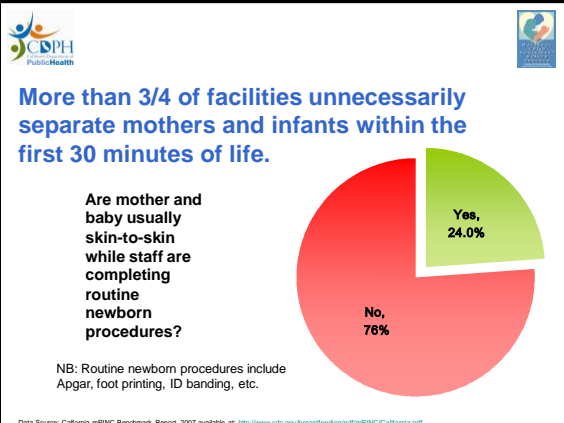




Inappropriate practices are common, especially among surgical (cesarean) births in California.

Percent of Facilities

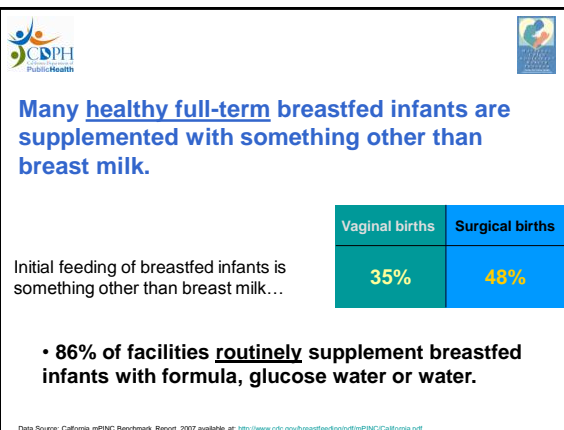
	Vaginal births	Surgical births
Most patients experience initial skin-to-skin contact for ≥30 minutes within....	...1 hour 52%	...2 hours 36%
Most patients have initial breastfeeding opportunity within...	...1 hour 42%	...2 hours 26%

Data Source: California mPINC Benchmark Report, 2007 available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5723a1.htm>



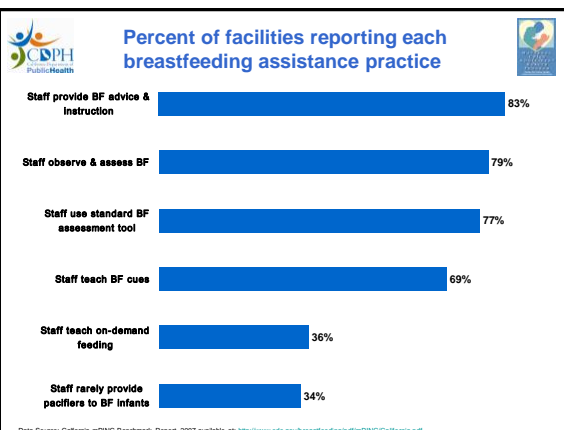
mPINC Dimension of Care: Feeding of Breastfed Infants

California Department of
Public Health



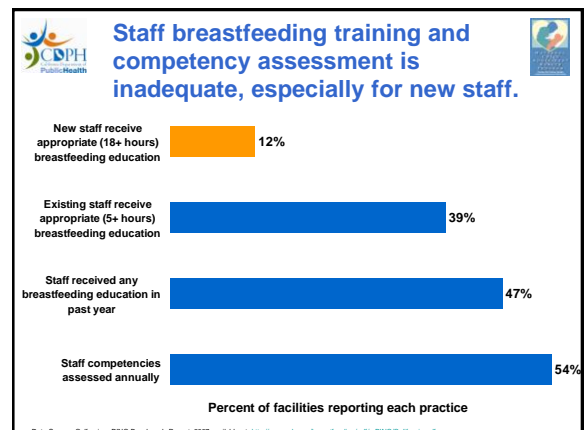
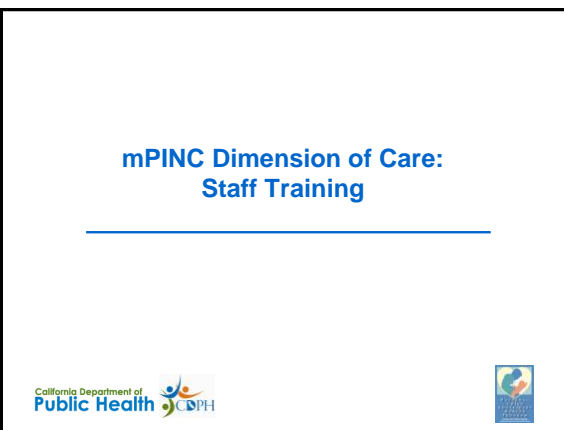
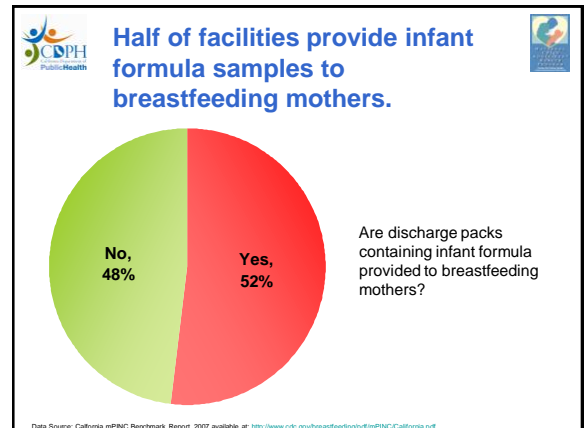
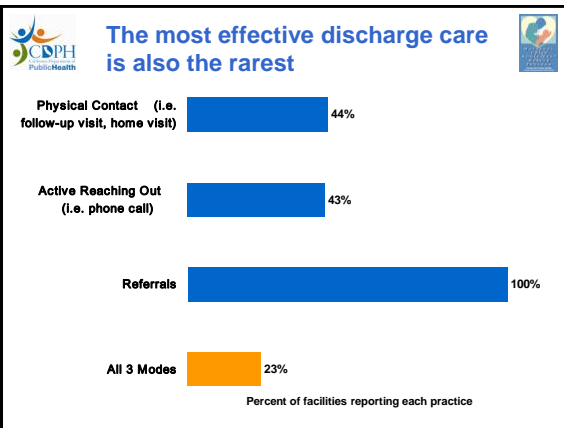
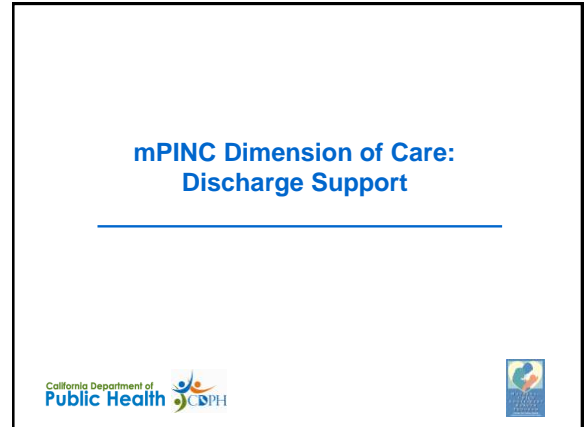
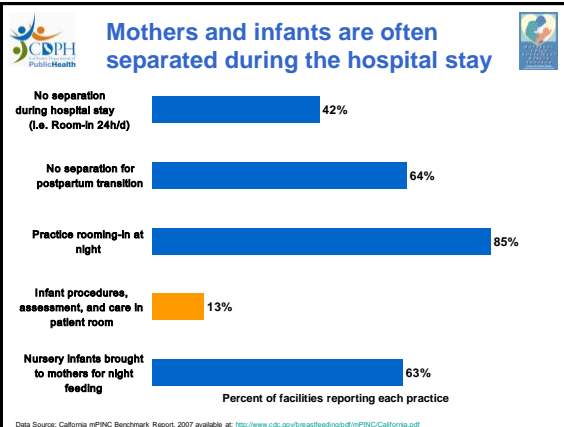
mPINC Dimension of Care: Breastfeeding Assistance

California Department of
Public Health

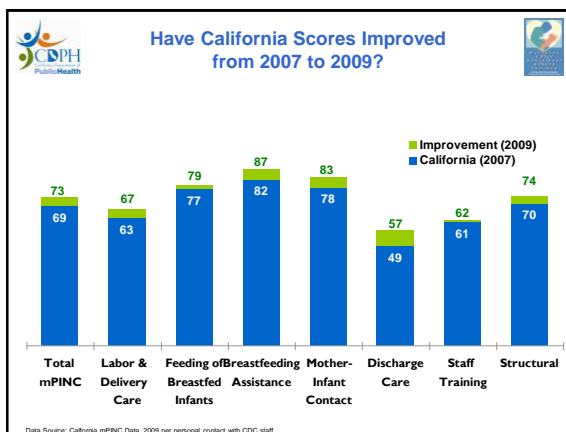
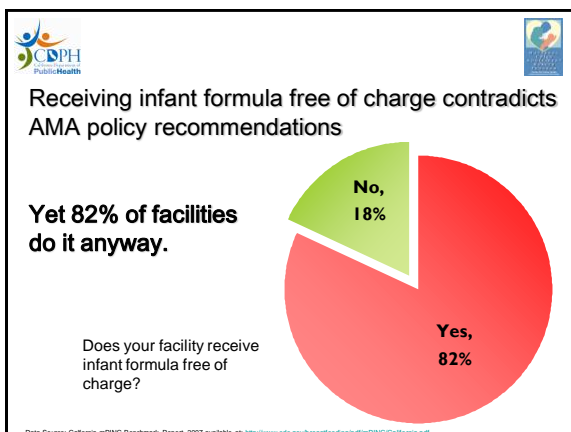
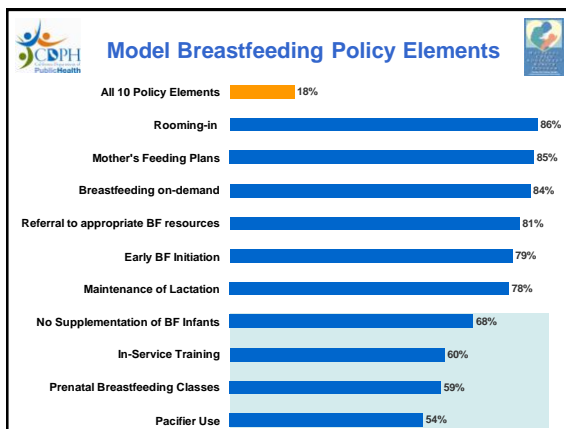


mPINC Dimension of Care: Mother-Infant Contact

California Department of
Public Health



mPINC Dimension of Care: Structural & Organizational Aspects of Care Delivery



Summary of mPINC Results

- California hospitals perform better than the national average and maternity care practices scores have improved from 2007 to 2009.
- Skin-to-skin contact is not standard of care in many California facilities.
- Many healthy, term, breastfed infants are being routinely supplemented
- Mother-infant pairs are separated during maternity stay for many reasons.

Summary of mPINC Results (Cont.)

- Discharge care is typically passive and not in-person.
- Distribution of formula marketing samples to breastfeeding mothers remains common in California.
- Only 12% of new staff in California facilities receive the recommended amount of breastfeeding training.
- While most facilities have a breastfeeding policy, few California facilities have comprehensive policies.

Association of mPINC Survey Scores and Exclusive Breastfeeding Initiation among California Hospitals, 2007

Maternity Practices in Infant Nutrition and Care (mPINC) and Newborn Screening In-Hospital Breastfeeding Data Linkage Project



Institutional-level Study: Impact of Hospital Policies on Breastfeeding Outcomes

(Rosenberg et al., 2008)



- Increased implementation of the Ten Steps of the Baby Friendly Hospital Initiative associated with an increase in **any** breastfeeding at 2 days and 2 weeks postpartum
- Hospitals with comprehensive breastfeeding policies are likely to have better breastfeeding support services and breastfeeding outcomes
- Future studies would benefit from including data related to other potential institutional-level confounders.



California mPINC Data Linkage Project



- CDPH collaborated with CDC to link hospital level in-hospital breastfeeding data, and hospital characteristic to mPINC Survey Responses
 - Approximately 80% of all CA hospitals/birth centers participated in mPINC, 2007
 - Data linkage successful for 175 hospitals
 - Allows stratification by Regional Perinatal Program of CA (RPPC) Regions



Aims of the Project



Research

- To explore the association between maternity care practices related to breastfeeding and **exclusive** in-hospital breastfeeding initiation in California hospitals.

Quality Improvement

- Provide RPPC Coordinators and other stakeholders with local mPINC Data for quality improvement activities



METHODS: Statistical Analysis Methods



Total mPINC score and subscale scores categorized:

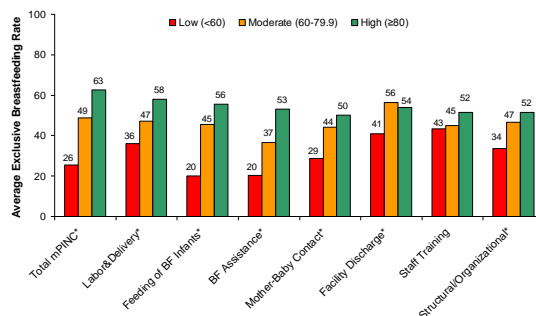
Low (<60),
Moderate (60-79.9)
High (≥80)

In regression models, grouped low/moderate (<80.0)

Potential confounders:
total births, % Hispanic, % c-section, % WIC



Average In-Hospital Exclusive Breastfeeding Rates by MPINC Total & Subscale Scores



Conclusion

- Evidence-based breastfeeding policies and practices are associated with an increase in **exclusive** breastfeeding initiation rates among California hospitals
- Jointly, in-hospital exclusive breastfeeding rates and mPINC scores can track progress in improving quality of maternity care and breastfeeding support services in California.

Translating mPINC Data to ACTION

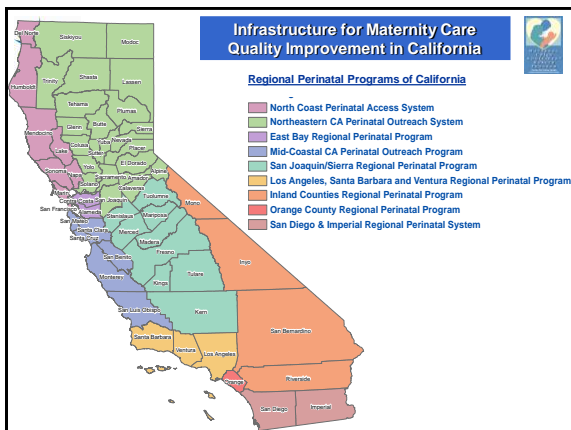
- CDPH sought to utilize mPINC data to...

INFORM

INFLUENCE

MONITOR CHANGE

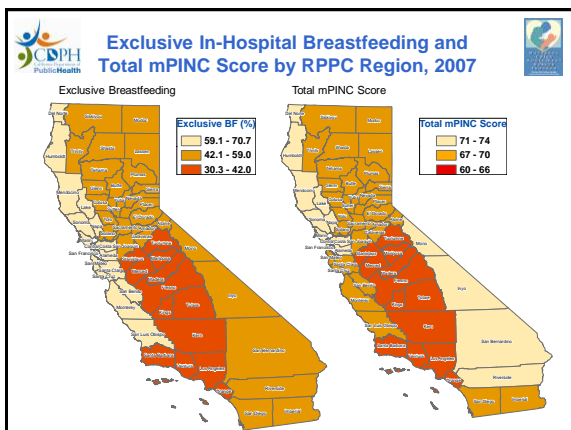
at the **LOCAL** level



RPPCs Have a Unique Opportunity to Improve the Quality of Maternity Care in CA

RPPC Staff are uniquely qualified to assist hospitals with maternity care quality improvement:

- Routinely provide resources, consultation, and technical assistance to hospitals to assist with quality improvement activities
- Conduct yearly on-site visits
- Built relationship/rapport with local hospitals
- Develop communication networks among agencies, providers, and individuals to exchange information.



Insert RPPC Name Here (RPPC Region #) Benchmark Report					
California Composite Quality Practice Score - 80					
RPPC Region #	Composite Quality Practice Score - 80	Percent of Practice with Best Available Practice	Region Total Score	State Total Score	
RPPC Region #	Composite Quality Practice Score - 80	Percent of Practice with Best Available Practice	Region Total Score	State Total Score	
1	71	60	60	60	
2	71	60	60	60	
3	71	60	60	60	
4	71	60	60	60	
5	71	60	60	60	
6	71	60	60	60	
7	71	60	60	60	
8	71	60	60	60	
9	71	60	60	60	
10	71	60	60	60	
11	71	60	60	60	
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98	71	60	60	60	
99	71	60	60	60	
100	71	60	60	60	

Regional mPINC Benchmark Report as a Maternity Care Quality Improvement Tool

Designed to encourage hospitals to:

- Participate in mPINC Survey
- Raise awareness/utilization of mPINC data
- Initiate quality improvement projects in maternity care setting
- Collaborate to address barriers to evidence-based maternity care policies and practices

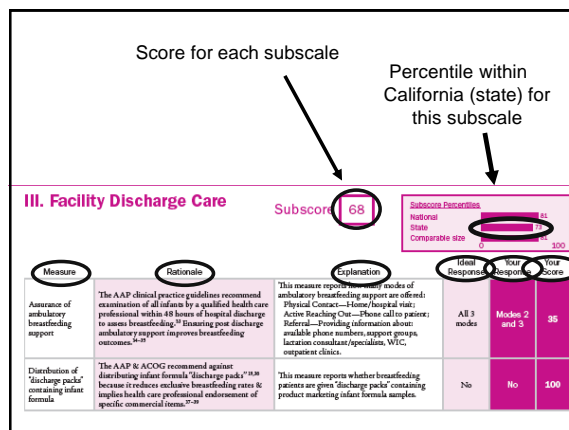
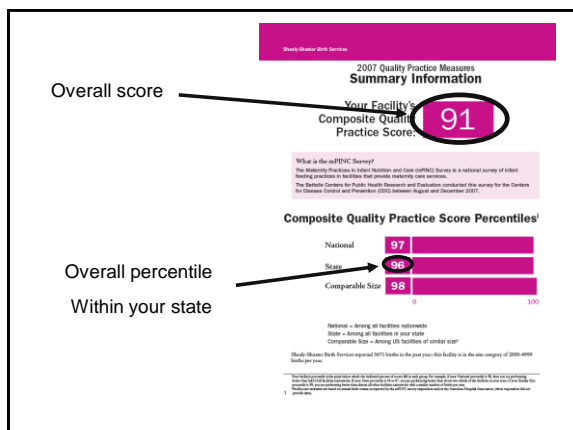
State and Regional mPINC Benchmark Reports are available at:
<http://cdph.ca.gov/impincdata>

CDPHE Bulletin
 Bulletin Number 16, June 2007
 Health
 All Regions

Maternity Practices in Infant Nutrition and Care (mPINC) Survey
 Quality Practice Measures—2007

Benchmark Report

DEPARTMENT OF HEALTH AND HUMAN SERVICES
 CENTERS FOR DISEASE CONTROL AND PREVENTION



Criteria for choosing priorities

- Strongest evidence base
 - Limit supplementation, separation, skin-to-skin
- Most feasible
 - Eliminate pacifiers, increase skin-to-skin
- Easiest to communicate
 - Supplementation, separation, discharge support
- Multiplier effects
 - Training/competency assessment, policy, separation
- Most room for improvement
 - Facility-specific (based on score & percentile)

Resources to assist hospitals to improve maternity care practices: <http://cdph.ca.gov/Breastfeeding>

California Model Hospital Policies and Internet-based Toolkit: similar to the BfHI Ten Steps to Successful Breastfeeding, these policies list proven actions to increase in-hospital breastfeeding. Model Policies and an internet-based toolkit with resources to implement them are available at: <http://cdph.ca.gov/CAHospitalBFToolkit>

Birth and Beyond California (BBC) Project: utilizes quality improvement methods and staff training to implement evidence-based policies and practices that support breastfeeding; all materials necessary to implement this project are available at: <http://cdph.ca.gov/BBCProject>

In-Hospital Breastfeeding Data: hospital level breastfeeding initiation rates using infant feeding data collected by the Newborn Screening Program, visit <http://cdph.ca.gov/breastfeedingdata>

Maternity Practice in Infant Nutrition and Care (mPINC): national survey of maternity care feeding practices and policies at all maternity hospitals in the US, visit <http://www.cdc.gov/impinc>

Regional Perinatal Programs of California: locally available to assist hospitals in implementing evidence-based breastfeeding services, to find your RPPC Coordinator, visit <http://cdph.ca.gov/RPPC>

Women, Infants and Children (WIC): WIC agencies are important sources of breastfeeding support for low-income women, find a local agency at: <http://www.cdph.ca.gov/programs/wicworks>